Amendment to the Claims

In the Claims:

Please cancel Claims 1-13 and 34-37, as such claims were allowed in prior U.S. Patent Application Serial No. 09/689,172, (issued as U.S Patent No 6,580,504).

Please cancel Claims 14-23, as such claims were allowed in prior U.S. Patent Application Serial No. 10/355,653.

1. (cancelled)
2. (cancelled)
3. (cancelled)
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19. (cancelled)
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21. (cancelled)
22. (cancelled)
23. (cancelled)

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24. (original) A flow cytometer system, adapted to determine one or more characteristics of an object suspended in a flow stream from an image of the object, comprising:

(a) a light source that produces a beam of light;

(b) a first reflecting surface and a second reflecting surface maintained in an opposite, facing relationship so as to define a reflection cavity including a field of view traversed by an object, said beam of light being incident upon the first reflecting surface at an acute angle relative to a normal to the first reflecting surface and being reflected back and forth between the first reflecting surface and the second reflecting surface so as to cross the field of view a plurality of times, thereby illuminating the object as it passes through the field of view;

(c) a first set of optics disposed so that light traveling from the object passes through the first set of optics so as to produce a first image of the object; and

(d) a first light detector disposed so as to receive the first image of the object, said first light detector detecting at least one characteristic of the object.

25. (original) The flow cytometer system of Claim 24, wherein the first light detector comprises a time-delay integration (TDI) detector that produces an output signal by integrating light from at least a portion of the object over time.

26. (original) The flow cytometer system of Claim 24, wherein the first light detector comprises a photomultiplier tube.

27. (original) The flow cytometer system of Claim 24, wherein the first reflecting surface and the second reflecting surface are supported by a support member.

28. (original) The flow cytometer system of Claim 24, further comprising:

(a) a second set of optics disposed so that light traveling from the object passes through the second set of optics so as to produce a second image of the object; and

(b) a second TDI detector disposed so as to receive the second image, said second TDI detector producing a second output signal that is indicative of at least one characteristic of the object, said second TDI detector producing the second output signal by integrating light from at least a portion of the object over time, wherein the first and second output signals are combined to produce a stereo image of the object.

29. (original) The flow cytometer system of Claim 24, wherein the first set of optics comprises a microscope objective.

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30. (original) The illumination system of Claim 24, wherein the first reflecting surface forms an acute angle with the second reflecting surface, said acute angle being selected so that the beam of light that is reflected back and forth between successively different points along the first reflecting surface and the second reflecting surface that are spaced apart in a first direction eventually begins to reflect back and forth between successively different points along the first reflecting surface and the second reflecting surface in a second direction that is opposite to the first.

31. (original) The illumination system of Claim 24, wherein at least one of the first reflecting surface and the second reflecting surface is curved to focus the beam of light onto an axis along which the object moves through the reflection cavity, to reduce a spread of the beam of light where the beam of light illuminates the object.

32. (original) The illumination system of Claim 31, wherein said at least one of the first and the second reflecting surfaces is curved about one of a first axis that is generally aligned with a direction of travel of the object, and a second axis that is generally orthogonal to the direction of travel of the object through the reflection cavity.

33. (original) The illumination system of Claim 31, wherein said at least one of the first and the second reflecting surfaces is curved about both a first axis that is generally aligned with a direction of travel of the object, and a second axis that is generally orthogonal to the direction of travel of the object through the reflection cavity.

34. (cancelled)

35. (cancelled)

36. (cancelled)

37. (cancelled)

Please add new Claims 38-40 as follows.

--38. (New) An illumination system that increases light incident upon an object moving relative to the illumination system, comprising:

(a) a light source producing a beam of light; and

(b) a first reflecting surface and a second reflecting surface disposed opposite each other and maintained in a facing relationship so as to define a reflection cavity, said reflection cavity having a field of view through which the object passes between the first reflecting surface and the second reflecting surface, said beam of light being incident upon the first reflecting surface at an

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acute angle relative to a normal to the first reflecting surface, said beam of light being reflected back and forth between the first and second reflecting surfaces so as to cross the field of view a plurality of times, said beam of light thus being incident on the object a plurality of times as the object traverses the field of view, said first reflecting surface and said second reflecting surface being sized and oriented such that said beam of light both enters and exits said reflection cavity adjacent one of said first reflecting surface and said second reflecting surface.

39. (New) An illumination system adapted to increase light incident upon an object that is moving relative to the illumination system, comprising:

(a) a light source producing a beam of light;

(b) a first reflecting surface and a second reflecting surface disposed opposite each other and maintained in a facing relationship so as to define a reflection cavity, said reflection cavity having a field of view through which the object passes between the first reflecting surface and the second reflecting surface, said beam of light being incident upon the first reflecting surface at an acute angle relative to a normal to the first reflecting surface, said beam of light being reflected back and forth between the first and second reflecting surfaces so as to cross the field of view a plurality of times, said beam of light thus being incident on the object a plurality of times as the object traverses the field of view; and

(c) means for controlling a waist of the beam of light.

40. (New) The illumination system of Claim 39, wherein said means comprises a curvature associated with at least one of the first reflecting surface and the second reflecting surface.--

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